

What is claimed is:

1. A performance evaluation apparatus comprising:  
a reference-performance data supplying unit for successively supplying reference-performance data, the  
5 reference-performance data prepared for designating a pitch of a musical sound for generating a sound, a time at which a sound of the musical sound should be generated and a time at which the sound of the musical sound should be vanished;  
a actual-performance data supplying unit for successively 10 supplying actual-performance data including a time of instructing to generate a sound of a musical sound at the designated pitch and a time of instructing to vanish the sound of the musical sound;  
a reference on-period extracting unit for extracting a 15 reference on-period indicative of a period between the time at which the sound of the musical sound should be generated and the time at which the sound of the musical sound should be vanished, based on the reference-performance data supplied from the reference-performance data supplying unit;
- 20 a real on-period extracting unit for extracting a real on-period indicative of a period between the time of instructing to generate the sound of the musical sound and the time of instructing to vanish the sound of the musical sound, based on the actual-performance data supplied from the  
25 actual-performance data supplying unit;
- a judging unit for judging whether the reference on-period extracted by the reference on-period extracting unit and the

real on-period extracted by the real on-period extracting unit overlap with each other or not;

a comparing unit for compare the pitch of the sound generated in the reference on-period extracted by the reference on-period

5 extracting unit and the pitch of the sound generated in the real on-period extracted by the real on-period extracting unit, only when the judging unit determines that the reference on-period and the real on-period overlap with each other; and an evaluation score calculating unit for adding an evaluation

10 point to an evaluation score, when the comparing unit determines that both the pitches are the same and for subtracting the evaluation point from the evaluation score, when the comparing unit determines that both the pitches are not the same.

2. The performance evaluation apparatus according to claim 1,

15 wherein the reference-performance data supplying unit comprises:

a performance-data memory for storing a series of data including on-event data instructing to initiate sound generation of the musical sound at the designated pitch, off-event data for

20 instructing to vanish the sound of the musical sound, and a time period between the on-event and the off-event; and

a reading out unit for reading out and supplying event data corresponding to the time period from the performance-data memory.

25 3. A performance evaluation program comprising:

a step of successively supplying reference-performance data, the reference-performance data prepared for designating a pitch

of a musical sound for generating a sound, a time at which a sound of the musical sound should be generated and a time at which the sound of the musical sound should be vanished;

5 a step of successively supplying actual-performance data including a time of instructing to generate a sound of a musical sound at the designated pitch and a time of instructing to vanish the sound of the musical sound;

a step of extracting a reference on-period indicative of a period between the time at which the sound of the musical sound

10 should be generated and the time at which the sound of the musical sound should be vanished, based on the supplied reference-performance data;

a step of extracting a real on-period indicative of a time period between the time of instructing to generate the sound of the musical sound and the time of instructing to vanish the sound of the musical sound, based on the supplied actual-performance data;

15 a step of judging whether the extracted reference on-period and the extracted real on-period overlap with each other or not;

20 a step of comparing the pitch of the sound generated in the real on-period with the pitch of the sound generated in the reference on-period, only when it is determined that the reference on-period and the real on-period overlap with each other; and a step of adding an evaluation point to an evaluation score,

25 when it is determined that both the pitches are the same and subtracting the evaluation point from the evaluation score, when it is determined that both the pitches are not the same.

4. A performance evaluation apparatus including a display device comprising:

a period setting unit for setting an evaluation period in accordance with contents of music data to be performed;

5 a performance evaluation unit for evaluating performance of the music data in every predetermined period within the evaluation period set by the period setting unit; and  
an evaluation outputting unit for displaying a result of evaluation made by the performance evaluation unit on the  
10 display device.

5. The performance evaluation apparatus according to claim 4, wherein the performance evaluation unit evaluates performance of the music data every predetermined number of notes.

6. The performance evaluation apparatus according to claim 4,  
15 wherein the performance evaluation unit evaluates performance of the music data every lapse of a predetermined time period.

7. The performance evaluation apparatus according to claim 4, wherein the period setting unit sets the evaluation period based on identification data contained in the music data.

20 8. The performance evaluation apparatus according to claim 4, wherein the period setting unit sets the evaluation period in accordance with the tendency of sound periods of sound events contained in the music data.

9. The performance evaluation apparatus according to claim 4,  
25 wherein the period setting unit sets the evaluation period in accordance with a tempo of the music data.

10. The performance evaluation apparatus according to claim

4, wherein the performance evaluation unit compares the performance in a current predetermined period with the performance in the previous predetermined period to evaluate the performance of the current predetermined period.

5 11. A performance evaluation program for executing a procedure, which comprises:

a first step of setting an evaluation period in accordance with contents of music data to be performed;

a second step of evaluating performance of the music data in

10 every predetermined period within the evaluation period; and a third step of displaying a result of evaluation made in the second step on a display device.

12. A performance supporting apparatus comprising:

a period setting unit for setting an evaluation period in accordance with contents of music data to be performed;

a performance evaluation unit for evaluating performance of the music data in the evaluation period set by the period setting unit;

a non-performance detecting unit for detecting a

20 non-performance state during which none of notes to be played in the evaluation period is played; and

a support providing unit for providing support for the result of evaluation made by the performance evaluation unit and the non-performance state detected by the non-performance

25 detecting unit.

13. The performance supporting apparatus according to claim 12, wherein the non-performance detecting unit determines that

there is the non-performance state when a state is detected in which up to the minimum number of notes are not played among the predetermined number of notes to be played.

14. The performance supporting apparatus according to claim 5 12, wherein the non-performance detecting unit determines that there is the non-performance state when a stat is detected in which up to the minimum number of notes are not played among the music data to be played in a predetermined time period.

15. The performance supporting apparatus according to claim

10 12, wherein the non-performance detecting unit determines that there is the non-performance state when either is detected of the state in which up to the minimum number of notes are not played among the music data to be played in the evaluation period set based on an identification data contained in the music data 15 and the state in which up to the minimum number of notes are not played in a predetermined period within the evaluation period set based on the identification data.

16. A performance-support processing program for executing a procedure, which comprises:

20 a first step of evaluating performance of the music data in the evaluation period set in accordance with contents of music data to be performed;

a second step of detecting a non-performance state in which non of notes to be played during the evaluation period is played;

25 and

a third step of providing support for the result of evaluation made in the first step and the non-performance state detected

in the second step.

17. A performance evaluation apparatus comprising:

a performance designating unit for designating a pitch of a sound-generation event contained in music data and a  
5 sound-generation period between a time of initiating sound generation and a time of vanishing the sound generation;

a performance detecting unit for detecting a pitch of a performed musical sound and a time of initiating performance of the musical sound;

10 a pitch judging unit for judging whether or not the pitch of the performed musical sound detected by the performance detecting unit coincides with the pitch of the sound-generation event designated by the performance designating unit;

a timing judging unit for determining that there is a

15 coincidence in timing, when the performance detecting unit detects the time of initiating performance within the sound-generation period designated by the performance designating unit, or when the performance designating unit designates the time of initiating sound generation within a

20 predetermined time period after the time of initiating performance detected by the performance detecting unit, and for determining that there is no coincidence in timing, when the performance detecting unit does not detect the time of initiating performance within the sound-generation period, or

25 when the performance designating unit does not designate the time of initiating sound generation within the predetermined time period after the time of initiating performance detected

by the performance detecting unit; and  
a performance evaluation unit for adding an evaluation point  
to the evaluation score, when the pitch judging unit determines  
that the pitch of the performed musical sound detected by the  
5 performance detecting unit coincides with the pitch of the  
sound-generation event designated by the performance  
designating unit and when the timing judging unit determines  
that there is a coincidence in timing, and for subtracting the  
evaluation point from the evaluation score, when the pitch  
10 judging unit determines that the pitch of the performed musical  
sound detected by the performance detecting unit does not  
coincide with the pitch of the sound-generation event  
designated by the performance designating unit or when the  
timing judging unit determines that there is no coincidence in  
15 timing.

18. The performance evaluation apparatus according to claim  
17, wherein the timing judging unit judges whether or not there  
is a coincidence in timing for each pitch designated by the  
performance designating unit, when the performance designating  
20 unit designates plural pitches of sound-generation events and  
plural sound-generation periods.

19. The performance evaluation apparatus according to claim  
17, further comprising:

a time setting unit responsive to a setting operation for  
25 setting a time period, wherein the timing judging unit  
determines that there is a coincidence in timing, when the  
performance designating unit designates the time of initiating

sound generation within the time period set by the time setting unit.

20. A performance evaluation program executing a procedure which comprises:

- 5 a first step of designating a pitch of a sound-generation event contained in music data and a sound-generation period between a time of initiating sound generation and a time of vanishing the sound generation;
- 10 a second step of detecting a pitch of a performed musical sound and a time of initiating the performance;
- 15 a third step of judging whether or not the pitch of the musical sound detected in the second step coincides with the pitch of the sound-generation event designated in the first step;
- 20 a fourth step of determining that there is a coincidence in timing, when the time of initiating the performance is detected in the second step within the sound-generation period designated in the first step, or when the time of initiating sound generation is designated in the first step within a predetermined time period after the time of initiating performance detected in the second step, and determining that there is no coincidence in timing, when the time of initiating the performance is not detected in the second step within the sound-generation period designated in the first step, or when the time of initiating sound generation is not designated in the first step within the predetermined time period after the time of initiating performance detected in the second step; and
- 25 a fifth step of adding an evaluation point to the evaluation

score, when it is determined in the third step that the pitch of the performed musical sound detected in the second step coincides with the pitch of the sound-generation event designated in the first step and when it is determined in the 5 forth step that there is a coincidence in timing, and subtracting the evaluation point from the evaluation score, when it is determined in the third step that the pitch of the performed musical sound detected in the second step does not coincide with the pitch of the sound-generation event 10 designated in the first step or when it is determined in the forth step that there is no coincidence in timing.--

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